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ABSTRACT

A study was conducted to determine the costs of illiteracy in Canada and to suggest future efforts to combat it. Research was conducted by interviewing 35 persons involved with education in Canada, such as officials of the Ministry of Skills Development, other government officials, statisticians, employment service personnel, representatives of business and labor, and adult education officials. U.S. Government and industry representatives were also interviewed in order to make comparisons with the Canadian data. Some of the findings were as follows: (1) research into the costs of illiteracy is imprecise and often only best guesses result; (2) an estimate of the costs to business of illiteracy in Canada is $4 billion annually; (3) the cost of illiteracy to Canadian society as a whole is estimated at approximately $10 billion; (4) these estimates represent a starting point for further research; and (5) there are many ways in which both the private and public sectors can mobilize to address the illiteracy problem, although the solutions will be complex and will extend well beyond literacy training alone. (This report contains three appendixes that are the main body of the report. The first appendix is a report on the cost of illiteracy to business in Canada by the Woods Gordon consulting firm. The second appendix is a further review of selected literacy cost questions from Maclean magazine's marketing department, and the third appendix contains suggestions for what can be done by the various sectors.) (KC)

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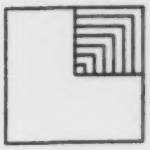

CANADIAN BUSINESS
TASK FORCE ON
LITERACY

MEASURING THE COSTS OF ILLITERACY IN CANADA

February, 1988

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ACKNOWLEDGMENTS

It should be noted that this report has been prepared with assistance from the Canadian Studies Program of the Department of the Secretary of State, for which the Task Force is grateful.

We would also like to acknowledge our sincerest thanks for the special role that Abitibi-Price Inc. has played in furnishing core funding to the Task Force during its first three years of operations.

Special thanks to Mr. John Ferguson of Ferguson Ferguson Architects for his extensive efforts in liaising with Woods Gordon on behalf of the Task Force; to Mr. John Parsons of Maclean's magazine for his supplementary research efforts as documented in Appendix II; to Ms. Heather Wakeling, also of Maclean's magazine, for typesetting assistance; to Mr. John O'Leary of Frontier College, ever supportive of the Task Force's activities; and to Professor Larry Mikulecky of Indiana University, whose wisdom and experience have substantially affected the tone of the final report.

EXECUTIVE SUMMARY

OBJECTIVES

1. The primary goals of this report are to present a typology of costs of illiteracy and to present the fairest estimate of the order of magnitude of these costs given the state of current knowledge.

2. It is also hoped that the report will signal where future efforts may be most usefully targeted.

FINDINGS

1. Research into the costs of illiteracy is imprecise and some costs cannot be estimated at all.

2. Even where estimates are possible, they are typically only best guesses, the accuracy of which may be questioned.

3. In many cases, literacy is a single symptom of a very complex social or personal problem that will require a complex response.

4. The main value of this report will therefore be as a preliminary agenda for future research.

5. Given these caveats, the direct cost to business of illiteracy in Canada is estimated to be in the order of $4 billion or more annually.

6. The cost to Canadian society as a whole is even more difficult to establish, but an order-of-magnitude estimate of approximately $10 billion is a fair estimate.

7. These estimates are published not with absolute conviction of their accuracy, but from a need to contribute to the debate on the position that literacy should occupy on the national agenda.

8. There are many ways in which both private and public sectors can mobilize to address the illiteracy problem, although in many cases solutions will be complex and will extend well beyond literacy training alone.

INTRODUCTION

The publication last September of the Southam Literacy Survey has established beyond reasonable doubt the existence of a literacy problem in Canada that is a blight to our self-image as a modern, progressive nation. Workers in the field have long known, however, that body counts alone will not persuade business and government to allocate resources adequate to the dimensions of the problem. What has been needed to initiate a serious dialogue is a reasonable estimate of the order of magnitude of the cost of illiteracy to business in particular and society in general.

Accordingly the Business Task Force designated such a study as its major project for the year ending May, 1988.

This report has four parts. The main section, brief and unanalytical, provides a summary of findings and conclusions. The first two appendices are in many ways more important as they contain the details of the research. The third appendix offers some suggestions as to how the various sectors of the economy can respond to illiteracy problems.

Appendix I is a report to the Task Force from the respected firm of management consultants, Woods Gordon. Their task was to provide a typology of costs and a best estimate of these costs where possible from reviewing the literature or interviewing experts. This appendix is the backbone of the study, containing a thorough discussion of all cost areas and a more general overview of methodological problems and constraints encountered in this kind of research.

One such problem, observed by Woods Gordon in its presentation to the Task Force, is that there is no finite limit to the amount of research that can be undertaken. Every conversation with an expert generates a further half-dozen leads. Each day that passes brings further news clippings that might be incorporated in the final report. The Task Force addressed this problem by requesting one of its active participants to evaluate those leads that arose subsequent to the completion of the Woods Gordon report. The upshot is Appendix II prepared by the marketing department of Maclean's magazine.

The first draft of this report was reviewed by one of the world's foremost workplace literacy experts, Professor Larry Mikulecky of Indiana University. Many of his suggestions for improvement have been incorporated in the final report. A more complete discussion of his views can be found in the "Limitations" section of the report.

Any analysis of the kind intended herein is at best an exercise in practical guesswork. The data, while fairly estimated, will require substantiation in order to justify specifics of new programs. It is hoped that this report will contribute to the debate about the position of literacy issues on the national agenda by providing an order-of-magnitude indication of the dimensions of the problem, along with an agenda for future research.

LIMITATIONS

As both appendices make abundantly clear, the imputation of specific costs to social problems is a hazardous game. While correlations can readily be made between virtually all social problems and illiteracy, it would be misleading to claim that illiteracy is therefore the cause of these problems. In some instances, illiteracy may be the effect, not the cause. In others, illiteracy may be one of several co-factors that are correlated.

These points have been forcefully re-emphasized by our external assessor, Professor Larry Mikulecky. While applauding the first draft as being "as thorough a compilation of what is known on this topic as I've seen", he has been at pains to point out the limitations of the research and to question the prudence of publishing any summary cost estimates that could be a magnet for the criticism of skeptics. In this, he echoes similar comments from Woods Gordon.

He has specifically commended this report for its efforts in classification of cost areas, its contribution of what is effectively an opinion survey of what experts think literacy problems are and its explicit call for future research to substantiate the paradigm of costs.

His major areas of concern, and the Task Force's response in finalizing this report are as follows:

Concern: Ultimately all cost estimates, given the paucity of research in this field, boil down to the best guesses of experts. Some guesses may be accurate, others less so. And we generally have little knowledge as to which is which without further research beyond the scope of this study.

Response: Professor Mikulecky acknowledges that the preliminary report was frank in its discussion of limitations in the data, but even more cautions have now been added.

Concern: The latest research underlines the inter-relatedness of literacy and other problems, and the likelihood, especially in extreme cases, that complex measures will be required to address the problem.

Response: This point is now emphasized in several places in the report.

Concern: The quality of the data is inadequate in itself to justify new literacy programs or to form the basis of important policy decisions without further research.

Response: This is not our intent. Our goal is to add to the debate about the appropriate position of literacy on the national agenda. A fair estimate of the order of magnitude of the problem is a reasonable contribution to this debate and may eventually lead to more finite research.

Concern: There is a risk in publishing gross numbers that are best estimates. They may act as a magnet for criticsm from those who wish to downplay the issue: they may be seen as crying wolf by those with little interest in the issue.

Response: These are valid concerns. Our goal in face of many uncertainties has been to provide the fairest estimate of the order of magnitude of the cost of illiteracy that is possible given the state of our knowledge today. Constructive criticism of this report should focus on this objective, rather than comparisons with some ideal that is not realistically attainable without the application of resources far in excess of what is currently available for literacy research.

To summarize, we believe this report and its appendices place literacy in its proper context. Where there is no solid information as to the degree to which literacy is responsible for a particular cost, a conservative estimate is made and all assumptions are clearly stated.

For some costs there is no apparent way of deriving even an estimate of the role of illiteracy, and so not even an order-of-magnitude estimate has been attempted. For this reason we believe there is a margin of safety in the estimates below.

RESEARCH SUMMARY

Caution: This table should be read only in the context of the above comments on "Limitations". The full text references in the appendices should also be read for a discussion of definitions, assumptions, data reliability, etc.

Cost		Best Estimate	Reference
(1)	Industrial accidents	$ 1.6 billion	App. I, pp. 15 -17
(2)	Lost productivity	2.5	App. I, p. 17 App. II, pp. 1-2, 3-5
(3)	Direct training	.05	App. I, pp. 21-22
(4)	Lost earnings	8.8	App. I, p. 25 App. II, pp. 3-5
(5)	Unemployment expenses	.17	App. I, p. 26
(6)	Federal prisons	.08	App. II, p. 2
	Direct costs to business (1), (2) & (3)	$ 4.2 billion	
	Costs to society (1), (3) - (6)	10.7 billion	

Notes:

1. See the references in the appendices for a complete discussion of each estimate.

2. No explicit estimate is attempted for the following identified cost areas: excessive supervisory time, lack of trainability or promotability, poor morale and absenteeism, consumer health and safety, other social assistance programs, federal adult education programs, all items within the jurisdiction of municipal or provincial governments, and many effects of social alienation. Nevertheless, a number of these areas may be captured indirectly in the estimate of the overall cost to society. See Appendix I for a descriptive discussion of each of these topics.

3. Items (2) and (4) are not mutually exclusive, so (2) is not included in the total cost to society.

APPENDIX I

Erratum: In the "Persons Interviewed Bibliography". Professor Larry Mikulecky is listed as being at Indiana State University. In fact, he is at Indiana University.

Canadian Business Task Force on Literacy

The Cost of Illiteracy to Business in Canada

October 1987

Woods Gordon
Management Consultants

A MEMBER OF ARTHUR YOUNG INTERNATIONAL

The Cost of Illiteracy to Business in Canada

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The Cost of Illiteracy to Business in Canada

1. Executive Overview

Our task was to review the work which has been conducted in the field to quantify the costs to business of illiteracy in Canada. The research involved a literature review of secondary sources as well as approximately 35 interviews with business and government organizations in Canada and the U.S. The research has not intended to be an exhaustive investigation, but rather an overview of the existing literacy costs and some of the issues from a business perspective.

For the purpose of the assignment, we have chosen to use the definitions of 'basic illiterates' and 'functional illiterates' used in the recent survey commissioned by Southam News. They defined a 'basic illiterate' as an adult Canadian who can barely read and write, and a 'functional illiterate' as one whose reading and writing skills are not sufficient to get by in everyday life. The two groups are referred to as 'illiterate'.

In reviewing the dimensions to the problem of illiteracy, there is almost unanimous agreement that there is a problem. What is less clear is its magnitude, about which there are almost no figures and little agreement.

The problem has many facets. Literacy related costs to business include costs due to industrial accidents, lost productivity, direct training costs, lost markets and problems caused by poor morale. There are also a number of costs to society including costs due to unemployment, social welfare costs, incarceration costs, as well as a host of subsidies of various forms. Ultimately, these also are costs to business.

In addition to these economic costs a number of individuals in the field have pointed out the tremendous social costs and the alienation experienced by illiterates in a society which is

totally oriented to literates for the needs of society and the work place.

The figure of $2 billion has been used in Canada to refer to the costs of illiteracy. This would appear to be a reasonable figure for business in Canada as a whole and may in fact be considerably higher.

2. Objectives

2.1. To determine the costs of illiteracy to business in Canada

The main objective of the assignment was to review the work that had been conducted in the field of illiteracy in order to identify more closely the costs to business of illiteracy in Canada.

'Illiteracy' was not explicitly defined for the purposes of our assignment. Part of the review involved arriving at a working definition of illiteracy which would serve as a useful starting point for determining the overall costs of illiteracy to business.

2.2. Secondly, to review the costs of illiteracy to Canadian society

A secondary objective was to determine the costs of illiteracy to Canadian society. This involved expanding the field of enquiry beyond direct business costs and examining in a more general way the costs of illiteracy to Canadian society.

3. Methodology

3.1. Literature Review

We have relied primarily on secondary sources. The emphasis of our research involved a review of the literature on literacy to determine the extent to which various aspects of the costs of illiteracy to business had previously been researched.

We have conducted a reasonably extensive review of the literature in North America to determine the extent to which various aspects of the costs of illiteracy have been addressed by other authors and organizations.

3.2. Interviews

We have completed approximately 35 interviews with key representatives of a large number of organizations in Canada and the U.S.

We contacted a sample of companies in Canada in a variety of industry sectors to obtain a qualitative understanding of the extent to which literacy issues are perceived to be a problem from industry's perspective.

We also contacted a large number of government and industry organizations in Canada and the U.S. to address a number of literacy related issues.

The decision to explore the U.S. experience was to find out whether any quantitative studies had been undertaken which may be of use in understanding aspects of the Canadian literacy problem and its costs.

In addition to the employers identified in this study, we have interviewed a large number of organizations in Canada recently in related manpower assignments and have incorporated some comments and observations on technology and literacy related issues from this work.

4. Definitions of Illiteracy

4.1. Definitions are contextual

Our review of the literature showed that there are a large number of definitions of 'illiteracy' and 'literacy' in use which correspond to the many different contexts in which literacy related issues arise.

Definitions of illiteracy may include both qualitative and quantitative aspects.

It can be argued that illiteracy is relative to an individual's needs. However, there is a Catch 22 to this idea since a person's level of literacy in many respects determines the societal context in which he lives.

4.2. Many definitions refer to the ability to function in society

Definitions often relate to the individual's ability to function within the business and societal context.

For example, General Motors of Canada defines an individual to be illiterate if he is impeded in performing at work or at home.

According to the Ford Foundation there are two types of illiteracy. Conventional literacy is the ability to read, write, and comprehend texts on skills necessary to get along within one's environment. Functional literacy is the possession of skills perceived as necessary to fulfill self-directed objectives (i.e., family, social, and consumer).

The U.S. Department of Education defines literacy in relation to the demands of the society in which an individual must function: 'Possession by an individual of the essential knowledge and skills which enable him or her to engage in all activities required for effective functioning in his or her group and community'. It should be noted that this is changing as jobs require more abilities to think, make decisions and act, not just carry out repetitive tasks.

Jonathan Kozol, author of 'Illiterate America', uses 'illiterate' to define those who are scarcely able to read, while 'semi-literate' is used to define those who are not able to read at levels equal to societal demands.

The Canadian Commission for UNESCO defines 'basic literacy' as the ability to read and write one's own name, while 'functional literacy' enables the individual to handle the tasks of every day life. Literacy is multidimensional and has qualitative and quantitative aspects to it which makes the definition difficult.

4.3. Some argue that literacy should be more than just reading

Bormuth argues that literacy refers to the ability to read and write, and communicate using the written word.

From this perspective, literacy is a two way process and refers to the ability to communicate as well as read.

4.4. UNESCO definition is common (less than Grade 9)

UNESCO suggests definitions for statistical purposes:

A person is 'illiterate' who cannot with understanding both read and write a short simple statement on his every day life.

A person is 'functionally illiterate' who cannot engage in all those activities in which literacy is required for effective functioning of his group and community and also for enabling him to continue to use reading, writing and calculation for his own and the community's development.

The achievement of grade 9 is a common proxy used for establishing functional literacy levels for statistical comparison.

4.5. There are a number of problems with the UNESCO definition

Clearly, grade levels do not necessarily measure reading ability.

Grade levels are often difficult to compare across different jurisdictions.

The U.S. Department of Labor argues that several people who are considered illiterate by the grade 9 criterion are quite capable of carrying on a reasonable existence in their own environment. They claim that there are so many problems with the UNESCO definition that they are no longer using it.

These findings were recently confirmed in a study undertaken by Southam News.

4.6. There are, however, several good reasons for using grade 9

The Advisory Council on Occupational Health and Occupational Safety suggests that for the adult with less than grade 9, reading skills are likely to be less than the grade level. Further, the perception of many in the business community it that the educational system in Ontario is such that the individual will likely reach high school regardless of reading ability.

The use of grade 9 gives a measure for literacy which can be used to provide statistical data without having to rely on primary data collection.

Grade levels are also used by business as a measure of minimum education necessary for employment or entry into specific trades training programs.

4.7. Some suggest that the real issues are education and skills

Cairn's argues that, 'debates about literacy and illiteracy which concentrate on levels of reading and writing are misleading; the real issue is whether people possess the education and skills necessary to participate fully and productively in the life of their society.'

The need for education and skills appropriate for business is key since work place requirements are in many ways changing and posing the need for more complex skills and reading requirements.

4.8. Literacy evolves with the demands of society and the work place

Kenter recently claimed that, 'as the work place becomes more complicated, requiring highly specialized skills and training, the definition of illiteracy will have to be broadened to include those who can't meet the new work place requirements.

Mikulecky claims that 'nobody knows what functional literacy is.' He argues that people have used a great number of measures which all give different results depending on which one is chosen. The real issue is the level of reading required in the work place. He suggests that reading materials have become more complicated over time and that the basic literacy standards are rising. From this perspective, he describes, 'functional literacy is being able to do with literacy what one must.'

4.9. Southam study used an operational definition based on a reading test

The recent study conducted by Southam Press and written up by Calamai used the following definition: 'the term "illiterate" refers both to adult Canadians who can barely read and write, called "basic illiterates", and also to those whose reading and writing and numbers skills are not sufficient to get by in every day life, called "functional illiterates".'

In our opinion these are useful definitions for the terms 'basic illiterate' and 'functional illiterates.'

The Southam study used an operational definition of

illiteracy based on a series of tests developed with the aid of a jury panel.

An important contribution of this study was the use of the tests of actual reading skills instead of using educational attainment as a measure.

Using the Southam study, the functional illiteracy level of 4.5 million adult Canadians (24%) is somewhat more than that which is derived by using the criterion of persons with less than grade 9 (21% according to the 1981 census). The Southam study showed that using the grade 9 criterion there are approximately 1.7 million who are wrongly labelled illiterate and a further 2.4 million who should be classified illiterate but who have levels of education of at least grade 9.

5. Trends in Business Affecting Skills Requirements

5.1. Labour supply trends

5.1.1. Decline in youth population 18 to 24

Statistics Canada reports that the number of youth between the ages of 18 to 24 will decline from 3.1 million (12.2% of Canada's population) in 1986 to 2.6 million (9.4%) in 1996.

A number of employers have recognized the decline in the youth population indicates that, in the future, it will be necessary to train and educate existing employees. There will not be enough young people to meet future skills requirements primarily by hiring of new people.

The implication is that Canada will not be able to afford the luxury of allowing a percentage of its young people to leave school as illiterates.

Sticht and Mikulecky comment that the best educated youth out of high school are choosing to continue their education. This results in fewer young people to choose from for lesser skilled jobs, or for traditional trades training such as auto mechanics.

5.1.2. Dryden; 40% entering grade 9 won't graduate from grade 12

Dryden, the former Ontario Youth Commissioner, in his 1986 report states, 'Excluding private schools, 40% of students in Ontario beginning in grade 9 do not graduate from grade 12; 76% do not graduate from grade 13; only 31% go on to college or university; only about two-thirds of them graduate.'

The Ontario Ministry of Education argues that a more appropriate drop-out rate is 32% which is based on the combination of data from public and private schools in Ontario.

Statistics are not kept at a national level for drop-out rates. It is probably reasonable to assume that the Ontario experience is not too different than other provinces in Canada.

5.2. Labour demand trends and skill implications

5.2.1. Unskilled and muscle work is declining

A number of studies have indicated that unskilled and muscle work is on the decline. The productivity drive in industry is on obtaining high levels of output with relatively fewer numbers of workers at all levels in the organization. The unskilled jobs, however, are particularly at risk. These jobs are particularly at risk of displacement due to the introduction of hard technologies such as automated warehousing, computer assisted manufacturing and robotics, as well as soft technologies including semiautonomous work groups which may require fewer numbers of workers.

General Motors reports that they currently employ 1 skilled worker for every 5.6 assembly-line workers and project that this ratio will be one to one in 20 years.

The jobs that will be growing will include administrative, technical and higher level service jobs. The illiterate individual will therefore be shut off from a large number of jobs in future.

5.2.2. Technology increasingly demands literacy and numeracy skills

The new technologies are having an impact on the types of skills people require. Some of the tasks which workers have traditionally undertaken are now being taken over by technology. Almost all industries are introducing computer based technologies which require a level of comprehension and ability over and above previous requirements.

While some have referred to this phenomenon as

'deskilling', the nature of work on the shop floor increasingly requires workers to operate in a monitoring, controlling and analytical mode as responsibility for the quality of production is being decentralized to the level of the workstation on the shop floor.

As a result, the worker on the shop floor is now being asked to be responsible for monitoring his output. The technology is requiring that the individual on the shop floor must be more literate than he was in the past. He must be able to read instructions, diagnose problems, input numbers and read from operating manuals. He must be able to communicate problems with his fellow workers and use analytical thinking to arrive at solutions.

In many respects, literacy is being redefined by the technology.

General Motors indicates that employees are now required to work with robots and lasers which demand a considerably higher level of literacy than before this technology was in place.

5.2.3. Basic skill levels required for entry level positions are rising

Many corporations now require a minimum of grade 12 for entry level positions. In a recent review of the automotive industry in Canada, for example, it was pointed out that Ford Motor Company now requires grade 12 for entry-level on its production line. This is in part because workers are now being required to read as part of their jobs. An interview with General Motors indicates that they have been requiring grade 12 for the last few years for the same reason.

Xerox Corporation in the U.S. projects that 'by 1990 three out of four jobs will require some education or technical training after high school.'

Upgrading and training is becoming more important in most industries and this places the school-leaving illiterate in a more vulnerable position if he is not able to participate or comprehend this training.

Canada will require a highly skilled work force particularly when competing against the Japanese. The Japanese are reported to be more educated on the whole with 95% of the total population having the equivalent to two years college in the U.S.

The combined problem of high drop out rates for students attending Canadian high schools and the rising levels being required in business for entry-level jobs thus presents very real problems for business and those who elect not to continue their education.

5.2.4. 85% of occupations require Grade 9+ reading levels

A study by Mikulecky has shown that 85% of all occupations require some reading at a grade 9 or more level. Further, 70% of occupations require reading at a grade 9 to 12 level. Only 15% of occupations require reading levels below the grade 9 level.

Mikulecky found that workers are able to read at one or two levels above their normal level when reading in their own field of expertise.

The high number of occupations requiring grades 9 to 12 suggests that this is another indicator for literacy, i.e.,

the ability to read at a level appropriate for the job.

5.2.5. Good communications increasingly required at all levels

Because literacy may be a dynamic concept relative to the evolving needs of the work place, some researchers include a wide variety of communications needs as being literacy-related. For example, these may include courses offered in the work place on reading efficiency, blueprint reading, business writing, effective communications, and so on.

With an ever more complex business environment, new communications needs are constantly emerging. For example, there is a demand for sales personnel with a sophisticated understanding of technical products. Some engineers are now required for these types of jobs. Often there may be a demand for these individuals to be comfortable with selling concepts, or understanding complex problems which a client may have. Clearly, these require sophisticated communications skills.

5.2.6. Ability to read, write, compute and to problem solve required

Mikulecky and other researchers have found that the average work place requires not only the ability to read, write and compute, but also the ability to use these skills in problem solving situations. The average worker must read and skim a wide variety of materials to solve problems and make decisions. This is in contrast to the school environment where the student is reading primarily to gather literal facts.

5.2.7. Most jobs require about 2 hours of reading minimum

Mikulecky found that most jobs require about 2 hours of reading per day ranging between a grade 10 and grade 12 level. Blue collar workers were reading about 97 minutes per day; these employees were reading forms, directions, order forms, and printouts. A retail or clerical worker was found to read about 3 hours daily. Most categories of workers in fact read more than most students. Only 2% of occupations examined required no reading or writing.

6. Costs to Business

Costs to business may conceptually include accident and safety related matters as well as in-house costs due to lost productivity, excessive supervisory time, poor product quality, lack of trainability, or problems related to employee morale. It may also include the direct training costs to firms who must upgrade their employees.

Costs to business outside the firm are primarily related to the loss in markets caused by consumers not being able to consume or gain access to information about the company's product.

In the following sections we have been able to quantify some of these costs.

6.1. Literacy Related Accident and Safety Costs Approximately $1.6 Billion

In addition to the risk of loss of health and life, industrial accidents cause extremely large expenditures for business.

The Cost of Illiteracy to Business in Canada

Data from Occupational Health and Safety Branch of Labour Canada show that total benefits payments as a result of industrial accidents for Canada were $2.7 billion in 1985. Assuming these have been increasing at a rate of 10% annually (below the historical rate of increase of 11.5%) this yields an estimate of $3.3 billion for 1987.

Among those interviewed, it was commented that this may not truly represent the total claims since there may be incentives for some employers not to report accidents. Ignoring this non-reporting factor, the Industrial Accident Prevention Association commented that the true costs to the employer may represent from 5 to 12 or more times the actual benefits paid. This is because of the loss of a person's productive time while not able to attend work. Also, a serious industrial accident can often involve shutting down of production entirely when the accident occurs. There may be additional costs due to machinery and materials damage, supervisory time, recruiting and training time and costs.

There are no published 'hard' data on the proportion of accidents attributable to illiteracy. The Advisory Council on Occupational Health and Occupational Safety has noted, however, that workers with less than grade 9 are overrepresented in a number of 'high risk' industries.

The Council discovered that non-English speaking workers and illiterate workers were overrepresented at the Ontario Workmen's Board Hospital and Rehabilitation Centre in Toronto in 1976.

Some employers believe that accidents caused by illiteracy or not being able to read or understand English tend to be the more costly accidents in benefits paid since the accidents tend to be more serious than the norm.

If it is assumed, conservatively, that accidents caused by illiteracy and inability to read English represent 10% of claims, and the actual cost to employers is 5 times the benefits paid, then the cost of health and safety to business is approximately $1.6 billion.

The Council also researched a number of other studies which underscored the more general finding that there are socioeconomic differences in mortality with lower education corresponding to shorter life spans in general.

6.2. In-House Costs Due to Lost Productivity

There are very little data available in Canada or the U.S. describing the costs to business due to lost productivity.

Xerox Corporation estimates that in the U.S., corporations will lose $25 billion due to lost productivity caused by literacy. This includes both lost productivity while people learn and also teaching them how to read.

Using the ten to one ratio, it is possible that Canadian corporations lose $1 billion through lost productivity caused by illiteracy.

In the various ways that productivity may be lost, there is a negative reinforcing element to each. For example, excessive supervisory time contributes to poor employee morale which contributes to poor product quality which may in turn affect markets, and so on.

6.2.1. Excessive supervisory time

We have not been able to find any research in this area,

however, the problem of excessive supervisory time required to explain and monitor illiterates was identified in a number of interviews.

6.2.2. Poor, inconsistent product quality

Problems with illiteracy can lead to poor or inconsistent product quality as well as excessive scrap in production.

A number of employers in the manufacturing sector identified literacy problems which had led to costly mistakes. In some instances, the inability to read manuals had led to poor product quality and damage of manufacturing equipment.

A considerable amount of innovation takes place on the shop floor. Some of this can lead to new product development and opening up of new market opportunities, especially as responsibility for control over the quality of production is increasingly being decentralized to the level of the shop floor. If the workers are unable to understand or communicate with each other, then there are costs associated with this inability to control quality not only through mistakes and scrap, but also through the loss of the ability to innovate.

6.2.3. Lack of trainability, promotability

The Ontario Federation of Labour, the Remedial Reading Centre and others have indicated that inability to read prevents employees from being trained or promoted.

Some employers interviewed that employees may

sometimes refuse to take a promotion if reading is required or 'hide' by electing to take a job which does not have a reading demand associated with it. Some employees will find support networks in-house that they will use to cover for their lack of reading ability.

6.2.4. Poor morale, absenteeism

The problems of morale are seen to be very real, but non-quantifiable aspects of illiteracy.

As a representative of the Youth Employment Services Canada stated, 'the illiterate individual has no drive or self-esteem.'

A representative from the Ontario Federation of Labour indicated that the life of an illiterate person is made more stressful than normal and the effects of this stress are reflected in the work place in terms of attitude and morale. A lower level of morale is also believed to be carried over into other dimensions of the individual's life.

6.3. Direct Training Costs

6.3.1. Employers spend approximately $1 billion on formal training in Canada

There are little data available in Canada pertaining to corporate expenditures on training.

A study conducted by Canada Employment and Immigration Commission reports that Canadian companies spent $1.06 billion on formal training, which includes

general or upgrading training requiring an instructor in 1984. Discussions with some of the personnel involved in analyzing the data point to considerable variations which companies use in costing their training budgets.

Training Magazine, based on a survey of 2550 companies in the U.S. with more than 50 employees reports that the total training budget for U.S. companies including training budgets for outside expenditures as well as total payroll for in-house training and development staff was $29 billion in 1986. This is a conservative estimate of total training costs since it does not include trainees' pay, training expenses incurred by other departments (e.g., sales, engineering, etc.) or costs of informal unstructured training that often occurs on the job. One industry training specialist estimates that two-thirds of formal training budgets originate in other line departments outside the training division.

The American Society for Training and Development (ASTD) reports that U.S. employers spend $30 billion annually on formal employee training and development. They claim that informal on-the-job training represents approximately an additional $180 billion. (These data are reported to be 2 or 3 years old.)

Training Magazine reports that 14.8% of U.S. employers provide 'remedial basic education' as part of formal training programs. It is unlikely that very much literacy related training is provided through informal on-the-job type training.

Based on the above Canadian and U.S. data, we estimate that Canadian companies now spend in the order of $1.2 billion on formal training of which approximately $100 million is publicly funded. If Canadian companies are

spending one tenth of U.S. companies, this figure may be considerably higher.

6.3.2. Canadian employers could spend $50 million on basic remedial and ESL/FSL training

A study was carried out by Mikulecky and Cousin of a 5% sample of Fortune 500 companies to determine their involvement in literacy and basic skills training. They found that 9% of the companies reporting provide basic education training and 14% provide training in English-as-a-second-language.

67% of the companies surveyed reported training in literacy-related training. These included a wide variety of programs in subjects such as blueprint reading, effective writing, business English courses and reading efficiency courses. It should be noted that the term 'literacy' in this context applies to a wide range of communications type skills rather than what traditionally is implied by basic remedial skills.

There are no data which we have been able to uncover which estimate the proportion of corporate training budgets which can be applied to basic remedial literacy skills in the sense of bringing workers up to a level which allows them to read at a level which is required for their jobs. The 9% reported by Mikulecky and the 15% reported by Training Magazine suggest that it is a problem in the U.S.

Our interviews would suggest that it is also a problem and a cost in Canada. Commencing this fall, GM Canada is offering more literacy courses caused by the lack of literacy skills in its work force. GM sends its employees

on their own time to the local Board of Education or the Ministry of Skills Development for upgrading to the grade 9 level. This upgrading tends to be for the company's older workers since they have been hiring grade 12 graduates for the last few years.

GM also offers courses on technical writing and speed reading skills for engineers and upper management respectively.

If we conservatively assume that employers spend approximately 5% of their formal training budgets on basic remedial literacy skills or on training related to English or French as a Second Language, then the overall corporate expenditures on basic literacy training would be approximately $50 million per year.

6.4. Costs in the Marketplace

6.4.1. Health and safety concerns

We have not been able to obtain any data on the costs associated with health and safety in the marketplace. Companies we interviewed have been giving some thought to these issues.

Shoppers Drug Mart expressed concern over the number of items sold without a prescription (i.e., over the counter) that are not clearly identified in a visual manner. For example, the inability to distinguish pills or medicines was a concern. Memorization of product packaging would appear to be the only way of identifying the product. When the company became aware of the number of illiterates in Canada and the U.S., it redesigned

its generic 'no name' product packaging to include a picture of the product on each package. Shoppers felt that this would help ensure the health and safety of illiterate customers. The company also feels that pharmaceutical companies should step up efforts to illustrate packaging to help illiterates.

The Safety Council of Canada is using international signs and symbols wherever appropriate to guard against employee injury. An employee must be trained in the meaning of these before he commences his job.

Kenter, however, comments that many warning signs, posters, data sheets and training manuals are difficult to understand. These must be simplified to reach all workers.

6.4.2. Reduced markets or lost market share

No companies we spoke with were able to estimate the size of lost markets as a result of not being able to market to illiterates. As pointed out by Kozol the publishing industry has the most to lose through not being able to market to this group.

Shoppers Drug Mart found that its generic 'no name' products were falling off to a large extent. When it redesigned its packaging to include pictures of the product, the sales of no name products increased again. Shoppers feels that a good portion of the increase in sales was attributable to the addition of the picture on the packaging.

Kozol reports that there may be loss of income as a result of customers not being able to read billings sent to

them. This may lead to additional collection costs associated with billings.

7. Costs to Society

7.1. Kozol suggests $20 billion in U.S.

Kozol in his book, 'Illiterate America', suggests that the cost of illiteracy in the U.S. is $20 billion. This figure includes $6 billion in child welfare costs and unemployment compensation, $6.6 billion in prison maintenance costs attributable to the proportion of illiterates in prison, as well as items such as swollen court costs, police budgets, and several billion dollars of workers' compensation.

The use of Kozol's $20 billion figure is often used for estimating a Canadian figure of $2 billion according to the traditional ratio of ten to one.

Kozol admits that there are no ways of proving that illiteracy causes the problems referred to above, which is a problem endemic to a great deal of the research on illiteracy. In other words, it is difficult to prove that illiteracy is a cause of other social and economic phenomena, whether it is an effect of these phenomena, or a 'co-factor'.

Kozol quotes a U.S. Senate Select Committee study which calculates the unrealized lifetime earnings forfeited by men 25 to 30 years old who have less than high school level skills is $237 billion.

The Ford Foundation in its 1979 report, Adult Illiteracy in the United States, points out that in that country, 'persons with limited education are often the same persons who

suffer from one or more of the other major social disadvantages – poverty, unemployment, racial or ethnic discrimination, social isolation. Inadequate education will probably be only one manifestation of their deprivation.' From their perspective illiteracy is just one factor interacting with many other social problems.

An interview with a representative of the U.S. Department of Labour reveals that the Labour Department feels that the Kozol estimates are too high and is conducting research to come up with its own estimate.

7.2. Cost due to lost earning power - $8.8 billion

Townson in a recent study for the Secretary of State derives a 'cost' of illiteracy due to lost income of $7.4 billion (1985 data). This cost is based on the difference between the average incomes of all income recipients (employed and unemployed) whose level of education is grade 8 or less and those whose average incomes include some high school. Townson cautions against using this figure as a true cost of illiteracy since upgrading people's education levels does not automatically entail that their incomes will also be upgraded.

We have updated Townson's results using more recent data and surviving these forward to obtain a cost due to lost income of $8.8 billion. The figure, of course, is subject to the same caveats that Townson uses.

We believe that to upgrade the skills of the labour force or those who are unemployed would not result in significant job displacement for employed individuals. The economy is sufficiently strong to absorb additional employment if the skills are available to business.

7.3. Costs of unemployment - $172 million, Townson

Townson identifies other costs to society including the costs of unemployment of $172 million. She points out that the participation rate in the labour force is lower for those with lower incomes. The calculation for the cost of unemployment is based on the assumption that the unemployed individual would be receiving wages equivalent to the average wages for the employed person with a comparable level of education. Townson states that these estimates are rough approximations and depend on assumptions which cannot be substantiated.

Townson also discusses some of the difficulties in deriving the costs of social assistance and the costs of incarceration which are unknown given the current availability of data.

7.4. Cost of literacy related government training programs

The federal government is currently attempting to quantify the magnitude of its expenditures in the field of adult education.

7.5. Cost of illiteracy related social assistance is unknown

Kozol estimates that child welfare costs associated with illiteracy for 1986 are $6.0 billion in the U.S.

Townson points out that there are greater illiteracy problems among social assistance recipients than the population as a whole. An analysis of the general welfare caseload in March 1986 revealed that 68% of recipients had,

at most, some secondary education. Many social assistance recipients are sole support mothers.

The Remedial Reading Centre notes that transfer payments made to individuals ultimately result in poor mental health.

In addition to social assistance there are a host of other public subsidies and transfer payments paid out to a large segment of the population. The extent to which illiteracy causes an individual to be a social welfare recipient is not known. However, it is likely that illiteracy causes a number of costs associated with this segment of this population.

7.6. Cost of illiteracy caused incarceration is unknown

Kozol notes that the prison population has the highest concentration of illiterates. Kozol assumes that half the prison population is illiterate and therefore half the costs of incarceration, or $6.6 billion in 1986, are illiteracy related.

Townson notes that a disproportionate number of inmates are functionally illiterate when compared with the rest of the population. She cautions against attributing their incarceration to illiteracy, per se.

7.7. Social and economic alienation

Apart from the many economic costs of illiteracy involved, many writers and researchers have commented on the social alienation experienced by the illiterate individual. Our industrial society is very much premised on the ability of the individual to be able to read and write at a minimal level to experience the basic amenities and pleasures of life.

The YMCA comments that the life skills of illiterates are often very poor. The YMCA notes that graduates of their training programs often gain increased self confidence which is often enough to enable the trainee to look for and find a job.

Kenter indicates that illiterate workers are often misdiagnosed as lazy, stupid or careless.

The Canadian Commission for UNESCO identifies the key issue is whether people possess the education and skills necessary to participate fully and productively in society. For this reason, literacy has been declared a universal human right.

APPENDIX

PERSONS INTERVIEWED

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PERSONS INTERVIEWED

Bill Lampert, Manager, Special Projects, Ministry of Skills Development
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APPENDIX II

CANADA'S WEEKLY NEWSMAGAZINE
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FURTHER REVIEW OF SELECTED LITERACY COST QUESTIONS

February, 1988

A Maclean Hunter Publication

Introduction

Maclean's has been asked by the Task Force to develop information further to the Woods Gordon report on the following topics:

- Productivity losses in business due to illiteracy
- Costs of incarceration
- Corroboration of the estimate of lost earning power

The first two items arise from news clippings brought to our attention by the Task Force subsequent to completion of the Woods Gordon report. The third item, the apparent largest cost of illiteracy to society as a whole, should be corroborated if at all possible.

Productivity Losses

The Woods Gordon report (page 17) refers to a Xerox estimate of $25 billion in annual productivity losses in the U.S. due to illiteracy. On further investigation, it is found that this estimate derives from the American Society for Training & Development, which has received a federal grant to investigate this subject. The $25 billion figure is "an educated estimate" according to an ASTD staff economist and is not published.

More promising, however, is an October 29th item in U.S.A. Today, in which Dr. Thomas G. Sticht is quoted as saying that poor literacy skills account for $200 million daily in lost productivity for American business and industry. Dr. Sticht has been interviewed by us and he reports the figure is based on sample tests of auto mechanics and supply clerks in real-life situations. Productivity was graded and correlated with measured reading level. About 10-15% in productivity losses were attributable to those with reading levels below

ninth grade. The lower differential was applied through a model to the U.S. labor force to arrive at the daily figure, or approximately $50 billion annually over a working year.

The estimate is subject to criticism because there is an implication that productivity gains of this order would result from upgrading the U.S. workforce to a ninth grade reading level. In actual practice this could not be done. In some cases, though by no means all, illiteracy is the result of other disabilities.

On the other hand, the study does not provide an estimate of lost productivity from those with inadequate literacy skills for their job, but with at least ninth grade reading levels. This may in fact be a far larger problem and yet one more directly tractable to literacy training as a direct solution.

As the purpose of this research project is to estimate the order of magnitude of the literacy problem, Sticht's figure for the U.S. seems a reasonable estimate, too high in some ways, too low in others. While no Canadian data is available, we recommend a conservative adaptation of 5% of the American figure, i.e. $2.5 billion, in providing an order-of-magnitude estimate of the productivity losses arising from functional illiteracy. This estimate ties in well with another approach to the problem outlined below.

Federal Incarceration Costs

Corrections Canada has an annual budget of $810 million. The initial estimate of 40% functional illiteracy among inmates has now been raised to a firm figure of 65% based on testing in 1987.

It is unclear to what degree illiteracy is a cause of or co-factor in behavior resulting in imprisonment. For the purposes of this review, an estimate of 10% of total costs has been set as providing an order-of-magnitude estimate of costs. Clearly the actual figure could be double the amount.

It should be noted that provincial penal systems, which house most of the inmates, have not been considered in this analysis.

Corroboration of Lost Earning Power Estimate

Concern has been expressed that the lost earning power figure of $8.8 billion (Woods Gordon report, page 25) has little corroboration. It should be noted that this figure is less than 2% of the gross national product - which does not seem out of order given the established severity of the literacy problem in Canada. Further it should be remarked that this is not simply the cost to society as society exists today, but is the difference between what we have and the far wealthier society we might expect if everyone were productive at minimal levels of functional literacy. This point may best be seen in an international context.

The figure also corresponds well with the estimate of lost productivity from current workers, i.e. a minimum of $2.5 billion. The latter amount is but one component of the total loss to society from our illiteracy problem. Much of the lost opportunity cost derives from the unemployed and unemployable.

A different way of looking at the cost is to ask how much it is per functionally illiterate person and to determine whether the answer stands up to common-sense analysis. Among workers, the estimate above for lost productivity amounts to about $1,250 per functionally illiterate worker per annum. Total costs to business from all areas amount to about $2,000 per functionally illiterate worker. The litmus test of common-sense analysis is whether this figure makes more sense as an order of magnitude that $200 or $20,000 per worker. Clearly there is no hard and fast answer, but we are confident that most readers will be more comfortable with the figure resulting from the cost study than with one-tenth or ten times the amount.

The figure for the overall cost to society also approximates $2,000 per functionally illiterate person per annum. To us, it does not make sense that this figure should be the same as the one above. There is not the same apparent drain on the economy from an illiterate retired person or homemaker that there is from someone in the workplace. The order of magnitude estimates used throughout this study do not readily permit an analysis of where the discrepancy may lie. The $10 billion

figure may be too high for society as a whole, or the $4 billion amount for business may not take productivity losses sufficiently into account, as we took only 5% of the estimated U.S. figure. Another possibility is that the overall cost captures some of the less tangible costs to business, e.g. lack of trainability, poor morale and absenteeism, inferral supervisory time. Again, however, for order-of-magnitude purposes, the number does not seem out of line with common sense.

APPENDIX III

What can be done by the various sectors?

Note: All individuals and organizations should be aware that illiteracy is often not a simple mater and complex responses are often required. Wherever possible, direct action to assist the illiterate should be undertaken with expert advice.

WHAT CAN BE DONE BY THE VARIOUS SECTORS?

Business can:

- indicate an openness to labor/management co-operation on literacy issues;
- establish or arrange for workplace literacy programs;
- release learners and tutors for training on business time;
- provide incentives to learners or tutors;
- display literacy materials in the workplace;
- donate in cash or in kind to national or local literacy programs;
- endorse or join organizations promoting literacy and encourage executives to serve on boards of literacy organizations;
- include literacy items in internal publications and customer mailings and literacy references in executive speeches;
- provide printing and mailing support to literacy organizations;
- allow these organizations access to the time of expert personnel in relevant areas, e.g. design, publicity, planning;
- set up literacy hot-lines in the workplace;
- lobby government for more effective literacy programs.

Note: Some of the above items may be sensitive issues in certain circumstances, e.g. incentives, and should not be pursued without the advice of literacy experts and the co-operation of the workforce.

Labor can likewise undertake many of the above suggestions. Many of the most successful workplace literacy programs are initiated or co-ordinated by unions, labor councils, etc.

Business Associations can perform or encourage many of the above activities. In addition they can:

- formulate a literacy policy;
- establish a literacy in the workplace committee;
- liaise between members and organizations in the literacy field;
- conduct research on literacy issues, including further research on the costs of illiteracy;
- allow access to their members by literacy groups;
- assist in literacy fundraising;
- provide regional support for national literacy groups.

Governments could and in some cases should:

- establish and fund a realistic, ten-year program for reduction of adult illiteracy;
- provide national and provincial information clearing-houses for literacy information;
- conduct appropriate communications programs to various targets such as business, tutors, learners, etc.;
- encourage business and labor to work together on literacy issues;
- enter into co-operative literacy programs with associations, business and labor;
- lead by example in readability of their own printed materials;
- work with all groups in society to re-establish respect for the printed word.